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BIOTECHNO, WPIDS, BIOENG, DISSABS
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=> S  Cellulomonas (3A) 69B4
L1           9 CELLULOMONAS (3A) 69B4

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=> d l2 1-6 bib ab

L2   ANSWER 1 OF 6  HCAPLUS  COPYRIGHT 2011 ACS on STN
AN   2009:1536437  HCAPLUS
DN   152:29839
TI   Libraries of proteinase variants and databases of variant properties and
     their use in protein engineering
IN   Basler, Joshua R.; Cascao-Pereira, Luis G.; Estell, David A.; Kellis,
     James T., Jr.
PA   Danisco US, Inc., USA
SO   PCT Int. Appl., 350 pp.
     CODEN: PIXXD2
DT   Patent
LA   English
FAN.CNT 3
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   WO 2009149200       A2     20091210    WO 2009-US46156        20090603
     WO 2009149200       A3     20100729
          W:  AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
              CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG,
              ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP,
              KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA,
              MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG,
              PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY,
              TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
          RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
              IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,
              SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
              TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
              ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AP, EA, EP, OA
     AU 2009256169       A1     20091210    AU 2009-256169         20090603
     CA 2726370          A1     20091210    CA 2009-2726370        20090603
     KR 2011020245       A      20110302    KR 2010-7027454        20090603
     EP 2297316          A2     20110323    EP 2009-759359         20090603
          R:  AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU,
              IE, IS, IT, LI, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE,
              SI, SK, TR, AL, BA, RS
     CN 102046783        A      20110504    CN 2009-80120416       20090603
     MX 2010013121       A      20110121    MX 2010-13121          20101130
PRAI US 2008-59695P      P      20080606
     WO 2009-US46156     W      20090603
AB   A method of protein engineering that builds databases correlating sequence
     variation with enzyme properties is described.  A library of variants is
     generated and members of the library are tested for properties of
     interest.  The resulting data are compiled into a database that can be
     used to identify functionally important residues and domains of the enzyme
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and can have predictive utility in protein engineering. This may allow the simultaneous optimization of two or more properties of the enzyme. The present invention also provides variant subtilisins suitable for various uses. A library of single and multiple substitution variants of subtilisin BPN' was prepared by PCR with mutagenic primers. These were then tested for the effects of the substitution on stability and catalytic activity against assay substrates and substrates for determining effectiveness in laundry detergents. This allowed the identification of substitutions that improved the com. valuable properties of the enzyme and to combinations of substitutions that improved stability, catalytic activity, and performance against wash performance test substrates.

L2 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 1
AN 2008:501242 HCAPLUS
DN 148:511886
TI Engineering of multiple mutation variants of Cellulomonas serine protease with improved properties, and use in detergents, animal feed and textile processing
IN Aehle, Wolfgang; Estell, David A.; Hommes, Ronaldus W.J.; Jones, Brian E.; Kolkman, Marc; Leeflang, Chris; Oh, Hiroshi; Poulose, Ayrookaran J.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo
PA Danisco US, Inc., USA
SO PCT Int. Appl., 166 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2008048392	A1	20080424	WO 2007-US18909	20070829
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW			
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
	US 20080063774	A1	20080313	US 2007-809104	20070531
	CA 2667043	A1	20080424	CA 2007-2667043	20070829
	KR 2009075825	A	20090709	KR 2009-7007937	20070829
	EP 2084273	A1	20090805	EP 2007-837430	20070829
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	JP 2010506590	T	20100304	JP 2009-533297	20070829
	IN 2009DN02135	A	20100820	IN 2009-DN2135	20090331
	MX 2009003936	A	20090423	MX 2009-3936	20090414
	CN 101528920	A	20090909	CN 2007-80038982	20090420
PRAI	US 2006-583334	A	20061019		
	US 2007-809104	A	20070531		
	US 2003-523609P	P	20031119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		
	WO 2007-US18909	W	20070829		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB The present invention provides Micrococcineae serine proteases having multiple substitutions. In particular, the present invention provides

Cellulomonas 69B4 serine proteases having multiple substitutions, DNA encoding these proteases, vectors comprising the DNA encoding the proteases, host cells transformed with the vector DNA, and enzymes produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising these serine protease variants. In particularly preferred embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN
AN 2009:908063 HCAPLUS
DN 151:214451
TI Multiple mutation variants of Cellulomonas serine protease for use in cleaning compositions, feed compositions and textile processing
IN Oh, Hiroshi; Leeflang, Chris; Estell, David A.; Jones, Brian E.; Hommes, Ronaldus W. J.; Kolkman, Marc; Poulose, Ayrookaran J.; Shaw, Andrew; Van Der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo; Aehle, Wolfgang
PA Danisco US, Inc., USA
SO Can. Pat. Appl., 162pp.
CODEN: CPXXEB
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2667043	A1	20080424	CA 2007-2667043	20070829
	US 20080063774	A1	20080313	US 2007-809104	20070531
	WO 2008048392	A1	20080424	WO 2007-US18909	20070829
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRAI	US 2006-583334	A	20061019		
	US 2007-809104	A	20070531		
	WO 2007-US18909	W	20070829		
	US 2003-523609P	P	20031119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides Micrococcineae serine proteases having multiple substitutions. In particular, the present invention provides Cellulomonas 69B4 serine proteases having multiple substitutions, DNA encoding these proteases, vectors comprising the DNA encoding the proteases, host cells transformed with the vector DNA, and enzymes produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising these serine protease variants. In particularly preferred embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

L2 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 2
AN 2005:493693 HCAPLUS
DN 143:54475
TI Protein and DNA sequences of serine proteases isolated from Micrococcineae spp., vectors and host cells incorporating same and applications thereof
IN Jones, Brian Edward; Kolkman, Marc; Leeflang, Chris; Poulose, Ayrookaran J.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo
PA Genencor International, Inc., USA
SO PCT Int. Appl., 333 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005052161	A2	20050609	WO 2004-US39006	20041119
	WO 2005052161	A3	20051103		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2009250976	A1	20100114	AU 2009-250976	20091216
PRAI	US 2003-523609P	P	20031119		
	AU 2004-293826	A3	20041119		

AB The present invention provides novel serine proteases, novel genetic material encoding these enzymes, and proteolytic proteins obtained from Micrococcineae spp., including but not limited to Cellulomonas spp. and variant proteins developed therefrom. In particular, the present invention provides protease compns. obtained from a Cellulomonas spp, DNA encoding the protease, vectors comprising the DNA encoding the protease, host cells transformed with the vector DNA, and an enzyme produced by the host cells. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising protease(s) obtained from a Micrococcineae spp., including but not limited to Cellulomonas spp. In alternative embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These mutant proteases also find use in numerous applications.

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)
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L2 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2011 ACS on STN DUPLICATE 3
AN 2005:490422 HCAPLUS
DN 143:55635
TI Cloning, sequence and mutagenesis of Asp serine proteinase from Cellulomonas and use of variant Asp in detergents, feed and textile processing
IN Jones, Brian Edward; Kolkman, Marc; Leeflang, Chris; Oh, Hiroshi; Poulose, Ayrookaran J.; Sadlowski, Eugene S.; Shaw, Andrew; Van der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo
PA Genencor International, Inc., USA; The Procter & Gamble Company

SO PCT Int. Appl., 356 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005052146	A2	20050609	WO 2004-US39066	20041119
	WO 2005052146	A3	20051110		
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	AU 2004293826	A1	20050609	AU 2004-293826	20041119
	AU 2004293826	B2	20090917		
	CA 2546451	A1	20050609	CA 2004-2546451	20041119
	EP 1694847	A2	20060830	EP 2004-811731	20041119
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	CN 1906303	A	20070131	CN 2004-80040520	20041119
	BR 2004016797	A	20070417	BR 2004-16797	20041119
	JP 2007515164	T	20070614	JP 2006-541585	20041119
	MX 2006005107	A	20060714	MX 2006-5107	20060504
	IN 2006DN02866	A	20070810	IN 2006-DN2866	20060519
	KR 2006121212	A	20061128	KR 2006-7012183	20060619
	US 20080063774	A1	20080313	US 2007-809104	20070531
	AU 2009250976	A1	20100114	AU 2009-250976	20091216
PRAI	US 2003-523609P	P	20031119		
	AU 2004-293826	A3	20041119		
	WO 2004-US39066	W	20041119		
	US 2006-576331	A2	20060418		
	US 2006-583334	A1	20061019		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

AB The present invention provides novel serine proteases, novel genetic material encoding these enzymes, and proteolytic proteins obtained from Micrococcineae spp., including but not limited to Cellulomonas spp. and variant proteins developed therefrom. In particular, the present invention provides serine protease compns. obtained from a Cellulomonas spp., DNA encoding the serine protease, vectors comprising the DNA encoding the serine protease, host cells transformed with the vector DNA, and an enzyme produced by the host cells. The nucleotide sequence of the gene asp and the encoded amino acid sequence of the Asp serine protease from Cellulomonas strain 69B4 are disclosed. The crystal structure and the atomic coordinates of the Asp serine protease from Cellulomonas 69B4 are provided. The nucleotide sequences and the encoded amino acid sequences of homologous serine proteases from Cellulomonas spp. and related microorganisms are also provided. The present invention also provides cleaning compns. (e.g., detergent compns.), animal feed compns., and textile and leather processing compns. comprising protease(s) obtained from a Micrococcineae spp., including but not limited to Cellulomonas spp. In alternative embodiments, the present invention provides mutant (i.e., variant) proteases derived from the wild-type proteases described herein. These mutant proteases also find use in numerous applications.

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

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RE.CNT  2     THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2   ANSWER 6 OF 6  HCAPLUS  COPYRIGHT 2011 ACS on STN
AN   2005:889465  HCAPLUS
DN   144:124778
TI   Cellulomonas bogoriensis sp. nov., an alkaliphilic cellulomonad
AU   Jones, Brian E.; Grant, William D.; Duckworth, A. W.; Schumann, Peter;
     Weiss, Norbert; Stackebrandt, Erko
CS   Genencor International BV, Leiden, 2333 CN, Neth.
SO   International Journal of Systematic and Evolutionary Microbiology (2005),
     55(4), 1711-1714
     CODEN: ISEMF5; ISSN: 1466-5026
PB   Society for General Microbiology
DT   Journal
LA   English
AB   An alkaliphilic, slightly halotolerant, chemo-organotrophic, Gram-pos.,
     rod-shaped bacterium, strain 69B4T, was isolated from the sediment of the
     littoral zone of Lake Bogoria, Kenya.  Phylogenetically, it is a member of
     the genus Cellulomonas, showing less than 97.5% sequence similarity to the
     type strains of other Cellulomonas species.  The highest level of
     similarity, albeit moderate, was found with respect to Cellulomonas
     cellasea DSM 20118T.  Chemotaxonomic properties confirm the 16S rRNA
     gene-based generic affiliation, i.e. a DNA G+C content of 71.5 mol.%,
     anteiso-C15:0 and C16:0 as the major fatty acids, MK-9(H4) as the major
     isoprenoid quinone, a peptidoglycan containing L-ornithine as the diamino acid
     and D-aspartic acid in the interpeptide bridge and phosphatidylglycerol as
     the only identified main polar lipid.  The strain is aerobic to
     facultatively anaerobic, being capable of growth under strictly anaerobic
     conditions.  Optimal growth occurs between pH values 9.0 and 10.0.  On the
     basis of its distinct phylogenetic position and metabolic properties,
     strain 69B4T represents a novel species of the genus Cellulomonas, for
     which the name Cellulomonas bogoriensis sp. nov. is proposed.  The type
     strain is 69B4T (=DSM 16987T =CIP 108683T).
OSC.G   11    THERE ARE 11 CAPLUS RECORDS THAT CITE THIS RECORD (11 CITINGS)
RE.CNT  17    THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
              ALL CITATIONS AVAILABLE IN THE RE FORMAT


=>
<------User Break------>

=> S  Cellulomonas (3A) (protease or proteinase or peptidase)
L3          17 CELLULOMONAS (3A) (PROTEASE OR PROTEINASE OR PEPTIDASE)

=> S (alkaline or Alkaliphilic) (3A) (protease or proteinase or peptidase)
L4       14910 (ALKALINE OR ALKALIPHILIC) (3A) (PROTEASE OR PROTEINASE OR PEPTI
               DASE)

=> l3 and l4
L3 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s l3 and l4
L5           0 L3 AND L4

=> S (SIZE OR MOLECULAR WEIGHT OR MW or kda or kd) (3A) 200
L6       67147 (SIZE OR MOLECULAR WEIGHT OR MW OR KDA OR KD) (3A) 200
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=> s l3 and 6
L7            4 L3 AND 6

=> duplicate
ENTER REMOVE, IDENTIFY, ONLY, OR (?):remove
ENTER L# LIST OR (END):
ENTER L# LIST OR (END):l7
DUPLICATE PREFERENCE IS 'HCAPLUS, WPIDS'
KEEP DUPLICATES FROM MORE THAN ONE FILE?  Y/(N):n
PROCESSING COMPLETED FOR L7
L8             4 DUPLICATE REMOVE L7 (0 DUPLICATES REMOVED)

=> d l8 1-4 bib ab

L8   ANSWER 1 OF 4  HCAPLUS  COPYRIGHT 2011 ACS on STN
AN   2009:908063  HCAPLUS
DN   151:214451
TI   Multiple mutation variants of Cellulomonas serine protease for use in
     cleaning compositions, feed compositions and textile processing
IN   Oh, Hiroshi; Leeflang, Chris; Estell, David A.; Jones, Brian E.; Hommes,
     Ronaldus W. J.; Kolkman, Marc; Poulose, Ayrookaran J.; Shaw, Andrew; Van
     Der Kleij, Wilhelmus A. H.; Van Marrewijk, Leo; Aehle, Wolfgang
PA   Danisco US, Inc., USA
SO   Can. Pat. Appl., 162pp.
     CODEN: CPXXEB
DT   Patent
LA   English
FAN.CNT 4
     PATENT NO.          KIND   DATE        APPLICATION NO.          DATE
     ---------------     ----   --------    -------------------      --------
PI   CA 2667043          A1     20080424    CA 2007-2667043          20070829
     US 20080063774      A1     20080313    US 2007-809104           20070531
     WO 2008048392       A1     20080424    WO 2007-US18909          20070829
         W:  AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA,
             CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI,
             GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG,
             KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
             MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL,
             PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN,
             TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
         RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
             IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BF,
             BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW,
             GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,
             BY, KG, KZ, MD, RU, TJ, TM
PRAI US 2006-583334      A      20061019
     US 2007-809104      A      20070531
     WO 2007-US18909     W      20070829
     US 2003-523609P     P      20031119
     WO 2004-US39066     W      20041119
     US 2006-576331      A2     20060418
ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT
AB   The present invention provides Micrococcineae serine proteases having
     multiple substitutions.  In particular, the present invention provides
     Cellulomonas 69B4 serine proteases having multiple substitutions, DNA
     encoding these proteases, vectors comprising the DNA encoding the
     proteases, host cells transformed with the vector DNA, and enzymes
     produced by the host cells.  The present invention also provides cleaning
     compns. (e.g., detergent compns.), animal feed compns., and textile and
     leather processing compns. comprising these serine protease variants.  In
     particularly preferred embodiments, the present invention provides mutant
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(i.e., variant) proteases derived from the wild-type proteases described herein. These variant proteases also find use in numerous applications.

L8 ANSWER 2 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2008-F00278 [200834] WPIDS
CR 2005-425197; 2005-425198
TI New multiple mutation variants of serine protease, useful in making cleaning composition, animal feed, or textile or leather processing composition
DC B04; D13; D16; D18; D21; D25; F06
IN AEHLE W; ESTELL D A; HOMMES R W; HOMMES R W J; JONES B E; KOLKMAN M; LEEFLANG C; OH H; POULOSE A J; SHAW A; VAN DER KLEIJ W A H; VAN MARREWIJK L; ERLER W; HOLMES R W J; HUANG H; MARREWIJK L V; VAN D K W A H; XIAO A
PA (DASC-C) DANISCO US INC; (DASC-C) DANISCO US INC GENENCOR DIV; (DASC-C) DANISCO US INC GENECOR DIV
CYC 121
PIA WO 2008048392 A1 20080424 (200834)* EN 166[7]
EP 2084273 A1 20090805 (200952) EN
KR 2009075825 A 20090709 (200956) KO
CA 2667043 A1 20080424 (200959) EN
CN 101528920 A 20090909 (200962) ZH
MX 2009003936 A1 20090430 (200979) ES
JP 2010506590 T 20100304 (201016) JA 210
PH 12009500603 A 20080424 (201060) EN
IN 2009DN02135 A 20100820 (201064) EN
ADT WO 2008048392 A1 WO 2007-US18909 20070829; CA 2667043 A1 CA 2007-2667043 20070829; CN 101528920 A CN 2007-80038982 20070829; EP 2084273 A1 EP 2007-837430 20070829; EP 2084273 A1 PCT Application WO 2007-US18909 20070829; KR 2009075825 A PCT Application WO 2007-US18909 20070829; CA 2667043 A1 PCT Application WO 2007-US18909 20070829; CN 101528920 A PCT Application WO 2007-US18909 20070829; MX 2009003936 A1 PCT Application WO 2007-US18909 20070829; JP 2010506590 T PCT Application WO 2007-US18909 20070829; PH 12009500603 A PCT Application WO 2007-US18909 20070829; CA 2667043 A1 PCT Nat. Entry CA 2007-2667043 20090420; JP 2010506590 T JP 2009-533297 20070829; KR 2009075825 A KR 2009-707937 20070829; PH 12009500603 A PH 2009-500603 20070829; PH 12009500603 A PCT Nat. Entry PH 2009-500603 20090401; MX 2009003936 A1 MX 2009-3936 20090414; IN 2009DN02135 A PCT Application WO 2007-US18909 20070829; IN 2009DN02135 A IN 2009-DN2135 20090331
FDT EP 2084273 A1 Based on WO 2008048392 A; KR 2009075825 A Based on WO 2008048392 A; CA 2667043 A1 Based on WO 2008048392 A; CN 101528920 A Based on WO 2008048392 A; MX 2009003936 A1 Based on WO 2008048392 A; JP 2010506590 T Based on WO 2008048392 A; PH 12009500603 A Based on WO 2008048392 A
PRAI US 2007-809104 20070531
US 2006-583334 20061019
AB WO 2008048392 A1 UPAB: 20080528
NOVELTY - An isolated serine protease variant having an amino acid sequence comprising at least two amino acid substitutions, where the substitutions are made at positions equivalent to the positions in a Cellulomonas 69B4 protease comprising the amino acid sequence of SEQ ID NO: 8, is new.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are:
(1) a composition comprising the isolated serine protease variant;
(2) a polynucleotide sequence encoding the isolated serine protease variant;
(3) an expression vector comprising a polynucleotide sequence encoding the isolated serine protease variant;
(4) a host cell comprising the expression vector;
(5) a cleaning composition comprising at least one serine protease variant;

(6) a method of cleaning by contacting a surface and/or an article comprising a fabric with the cleaning composition, and optionally washing and/or rinsing the surface or material;

(7) an animal feed comprising the serine protease variant; and

(8) a textile or leather processing composition comprising the serine protease variant.

USE - The variant is useful in making cleaning composition, animal feed, or textile or leather processing composition (claimed). The cleaning composition may be used as fabric cleaning composition, or for may also be used for personal care, skin, and hair cleaning compositions.

ADVANTAGE - The present invention provides serine protease variant having improved acid stability, thermostability, LAS stability, activity, caseinolytic activity, keratinolytic activity, wash performance activity, dishwashing performance activity, and stain removal activity, and altered surface property.

L8 ANSWER 3 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2005-425198 [200543] WPIDS
CR 2005-425197; 2008-F00278
DNC C2005-130512 [200543]
TI New serine protease (isolated from a member of the Micrococcineae) useful in e.g. cleaning composition and animal feed composition
DC D13; D16; D18; D25; F06
IN JONES B E; KOLKMAN M; LEEFLANG C; POULOSE A J; SHAW A; VAN DER KLEIJ W A; VAN MARREWIJK L
PA (GEMV-C) GENENCOR INT INC
CYC 106
PIA WO 2005052161 A2 20050609 (200543)* EN 333[39]
ADT WO 2005052161 A2 WO 2004-US39006 20041119
PRAI US 2003-523609P 20031119
AB WO 2005052161 A2 UPAB: 20051222

NOVELTY - Isolated serine protease (I), obtained from a member of the Micrococcineae, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) compositions comprising an isolated serine protease having immunological cross-reactivity with the serine proteases obtained from a member of the Micrococcineae and particularly the protease obtained from Cellomonas 69B4;

(2) an isolated serine protease comprising at least 60% amino acid identity with the serine protease of a fully defined 189 amino acid (SEQ ID Number 8) sequence given in the specification;

(3) an isolated protease variant having an amino acid sequence comprising at least one substitution of an amino acid made at a position equivalent to a position in a Cellulomonas 69B4 protease comprising the amino acid sequence of SEQ ID Number 8;

(4) expression vectors comprising polynucleotide sequences encoding the protease variants;

(5) host cells comprising the expression vectors;

(6) serine proteases produced by the host cells;

(7) a variant protease comprising one of 13 fully defined 85-428 amino acid sequences (SEQ ID Number 54, SEQ ID Number 56, SEQ ID Number 58, SEQ ID Number 60, SEQ ID Number 62, SEQ ID Number 64, SEQ ID Number 66, SEQ ID Number 68, SEQ ID Number 70, SEQ ID Number 72, SEQ ID Number 74, SEQ ID Number 76 or SEQ ID Number 78);

(8) a composition comprising at least a portion of (I), where the protease is encoded by a polynucleotide sequences of: a fully defined 1680 base pair (SEQ ID Number 1) sequence given in the specification, a fully defined 1488 base pair (SEQ ID Number 2) sequence given in the specification, a fully defined 1444 base pair (SEQ ID Number 3) sequence given in the

specification or a fully defined 587 base pair (SEQ ID Number 4) sequence given in the specification;

(9) a variant serine protease, where the protease comprises at least one substitution corresponding to the amino acid positions in SEQ ID Number 8, and the variant protease has better performance in at least one of: keratin hydrolysis, thermostability, casein activity, LAS stability and/or cleaning, as compared to wild-type Cellulomonas 69B4 protease;

(10) an isolated polynucleotide comprising a nucleotide sequence having at least 70% identity to SEQ ID Number 4, or being capable of hybridizing to a probe derived from the nucleotide sequence of SEQ ID Number 4, under conditions of intermediate to high stringency, or being complementary to the nucleotide sequence of SEQ ID Number 4;

(11) a vector comprising the isolated polynucleotide;

(12) a host cell transformed with the vector comprising the isolated polynucleotide;

(13) a polynucleotide comprising a sequence complementary to at least a portion of the sequence of SEQ ID Number 4;

(14) a method of producing an enzyme having protease activity, comprising: transforming a host cell with an expression vector comprising a polynucleotide having at least 70% sequence identity to SEQ ID Number 4; cultivating the transformed host cell under conditions suitable for the host cell to produce the protease; and recovering the protease;

(15) a probe comprising the polynucleotide sequence substantially identical to a corresponding fragment of SEQ ID Number 4, where the probe is used to detect a nucleic acid sequence coding for an enzyme having proteolytic activity, and the nucleic acid sequence is obtained from a member of the Micrococcineae;

(16) a cleaning composition comprising at least one serine protease obtained from a member of the Micrococcineae;

(17) a composition comprising (I) and at least one stabilizing agent; and

(18) an animal feed comprising (I).

Phe-Asp-Val-Ile-Gly-Gly-Asn-Ala-Tyr-Thr (SEQ ID Number 8) G-C-G-C-G-C-T-G-C-G (SEQ ID Number 1) A-T-G-A-C-A-C-C-A-C (SEQ ID Number 2) A-A-C-G-A-G-C-C-C-G (SEQ ID Number 3) T-T-C-G-A-C-G-T-G-A (SEQ ID Number 4)

USE - The invention deals with serine proteases, genetic material encoding the proteases, proteolytic proteins obtained from Micrococcineae spp, variant proteins developed from them, vectors comprising the DNA encoding the protease, host cells transformed with the vector DNA and enzymes produced by the host cells. (I) is useful in cleaning compositions and animal feed compositions (all claimed). (I) is useful in laundry and dish detergents. (I) is useful in textile and leather processing compositions.

ADVANTAGE - (I) is extremely stable. The isolated polynucleotide of (I) provides the capability of isolating further polynucleotides, which encode proteins having serine protease activity. The enzyme compositions have comparable or improved wash performance, as compared to presently used subtilisin proteases.

L8 ANSWER 4 OF 4 WPIDS COPYRIGHT 2011 THOMSON REUTERS on STN
AN 2005-425197 [200543] WPIDS
CR 2005-425198; 2008-F00278
DNC C2005-130511 [200543]
TI New serine protease obtained from a member of the Micrococcineae, useful in preparing cleaning, animal feed or textile or leather processing compositions
DC B04; C06; D12; D13; D16; D18; D21; D25; F06
IN AEHLE W; ESTELL D A; HOMMES R W J; JONES B; JONES B E; KOLKMAN M; LEEFLANG C; OH H; POULOSE A; POULOSE A J; SADLOWSKI E; SADLOWSKI E S; SADLOWSKI S; SHAW A; VAN DER KLEIJ W; VAN DER KLEIJ W A; VAN DER KLEIJ W A H; VAN DER KLEY W A H; VAN MARREWIJK L; VAN MARREWIJK L P M; MARREWIJK L V

PA (GEMV-C) GENENCOR INT; (GEMV-C) GENENCOR INT INC; (PROC-C) PROCTER & GAMBLE CO; (PROC-C) PROCTER&GAMBLE CO;
(AEHL-I) AEHLE W; (ESTE-I) ESTELL D A; (HOMM-I) HOMMES R W J; (JONE-I) JONES B E; (KOLK-I) KOLKMAN M; (LEEF-I) LEEFLANG C; (OHHH-I) OH H; (POUL-I) POULOSE A J; (SHAW-I) SHAW A; (VKLE-I) VAN DER KLEY W A H; (VMAR-I) VAN MARREWIJK L P M; (DASC-C) DANISCO US INC

CYC 107

PIA WO 2005052146 A2 20050609 (200543)* EN 66[39]
EP 1694847 A2 20060830 (200657) EN
AU 2004293826 A1 20050609 (200675) EN
MX 2006005107 A1 20060801 (200701) ES
BR 2004016797 A 20070417 (200729) PT
KR 2006121212 A 20061128 (200735) KO
CN 1906303 A 20070131 (200740) ZH
JP 2007515164 T 20070614 (200741) JA 317
IN 2006DN02866 A 20070810 (200780) EN
US 20080063774 A1 20080313 (200822) EN
AU 2004293826 B2 20090917 (200965) EN
AU 2009250976 A1 20100114 (201010)# EN

ADT WO 2005052146 A2 WO 2004-US39066 20041119; US 20080063774 A1 Provisional US 2003-523609P 20031119; AU 2004293826 A1 AU 2004-293826 20041119; AU 2004293826 B2 AU 2004-293826 20041119; BR 2004016797 A BR 2004-16797 20041119; CN 1906303 A CN 2004-80040520 20041119; EP 1694847 A2 EP 2004-811731 20041119; EP 1694847 A2 WO 2004-US39066 20041119; MX 2006005107 A1 WO 2004-US39066 20041119; BR 2004016797 A WO 2004-US39066 20041119; KR 2006121212 A WO 2004-US39066 20041119; JP 2007515164 T WO 2004-US39066 20041119; IN 2006DN02866 A WO 2004-US39066 20041119; US 20080063774 A1 CIP of WO 2004-US39066 20041119; JP 2007515164 T JP 2006-541585 20041119; US 20080063774 A1 CIP of US 2006-576331 20060418; MX 2006005107 A1 MX 2006-5107 20060504; IN 2006DN02866 A IN 2006-DN2866 20060519; KR 2006121212 A KR 2006-712183 20060619; US 20080063774 A1 Cont of US 2006-583334 20061019; US 20080063774 A1 US 2007-809104 20070531; AU 2009250976 A1 Div Ex AU 2004-293826 20041119; AU 2009250976 A1 AU 2009-250976 20091216

FDT EP 1694847 A2 Based on WO 2005052146 A; AU 2004293826 A1 Based on WO 2005052146 A; MX 2006005107 A1 Based on WO 2005052146 A; BR 2004016797 A Based on WO 2005052146 A; KR 2006121212 A Based on WO 2005052146 A; JP 2007515164 T Based on WO 2005052146 A; AU 2004293826 B2 Based on WO 2005052146 A

PRAI US 2003-523609P 20031119
WO 2004-US39066 20041119
US 2006-576331 20060418
US 2006-583334 20061019
US 2007-809104 20070531
AU 2009-250976 20091216

AB WO 2005052146 A2 UPAB: 20051222
NOVELTY - An isolated serine protease obtained from a member of the Micrococcineae, is new.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a composition comprising an isolated serine protease having immunological cross-reactivity with the serine protease or at least a portion of the isolated serine protease;

(2) an isolated protease variant having an amino acid sequence comprising at least one substitution of an amino acid made at a position equivalent to a position in a Cellulomonas 69B4 protease comprising the 189-amino acid sequence (SEQ ID NO: 8);

(3) an isolated polynucleotide comprising a nucleotide sequence (i) having at least 70% identity to the 584-bp sequence (SEQ ID NO: 4), or (ii) being capable of hybridizing to a probe derived from the 584-bp

sequence (SEQ ID NO: 4), under conditions of intermediate to high stringency, or (iii) being complementary to the 584-bp sequence (SEQ ID NO: 4);

(4) an expression vector comprising a polynucleotide sequence encoding the protease variant;

(5) a host cell comprising or transformed with the expression vector;

(6) a method of producing an enzyme having protease activity;

(7) a probe comprising a 4-150 polynucleotide sequence substantially identical to a corresponding fragment of the 584-bp sequence (SEQ ID NO: 4), for detecting a nucleic acid sequence coding for an enzyme having proteolytic activity and obtained from a member of the Micrococcineae;

(8) a cleaning composition comprising at least one serine protease obtained from a member of the Micrococcineae or a proteolytic enzyme comprising an amino acid sequence having at least 70% sequence identity to the 584-bp sequence (SEQ ID NO: 4), and a suitable cleaning formulation;

(9) a method of cleaning; and

(10) an animal feed comprising the serine protease.

USE - The serine protease is useful in preparing cleaning compositions, animal feed compositions or textile or leather processing compositions (claimed).

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